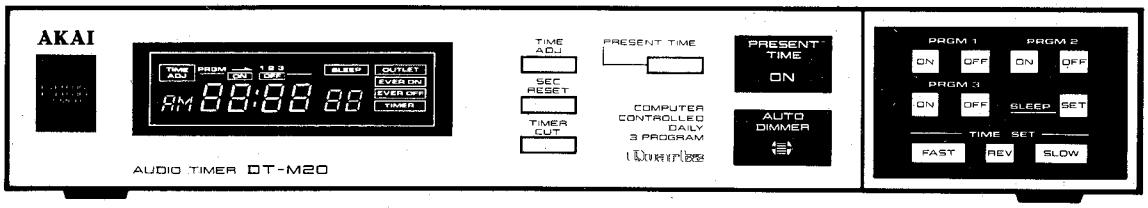
AKAI SERVICE MANUAL



AUDIO TIMER

MODEL DT-M20

I. SPECIFICATIONS

TIMER ACCURACY	Within ±15 seconds deference in a month, (Approx. 20°C)
TIMER BASE	Quartz oscillator
TIMER OPERATION ACCURACY	Within 0.2 seconds
TIMER DISPLAY	12 hours display for USA, Canada, Japan and U.K 24 hours display for Europe Except U.K
TIMER SYSTEM	Daily type
TIMER SET PERIOD	1 minute to 23 hours and 59 minutes
SLEEP TIMER PERIOD	1 minute to 1 hour and 59 minutes
POWER REQUIREMENTS	AC 100V, 50/60 Hz for Japan AC 120V, 60 Hz for USA and Canada AC 220V, 50 Hz for Europe Except U.K AC 240V, 50 Hz for U.K AC 110V, 120V, 220V, or 240V, 50/60 Hz convertible for other countries
AC OUTLETS	Switched x 5, total 1200W max. for Japan Switched x 5, total 600W max. for USA, Canada Switched x 5, total 500W max. for Europe except U.K Switched x 5, total 3A max. for U.K Switched x 5, total 600W max. for other countries (U)
POWER CONSUMPTION	7W
DIMENSIONS	350(W) x 52(H) x 225(D) mm (13.8 x 2.0 x 8.9 inches)
WEIGHT	2.1 kg (4.6 lbs)

* For improvement purposes, design and specifications are subject to change without notice.

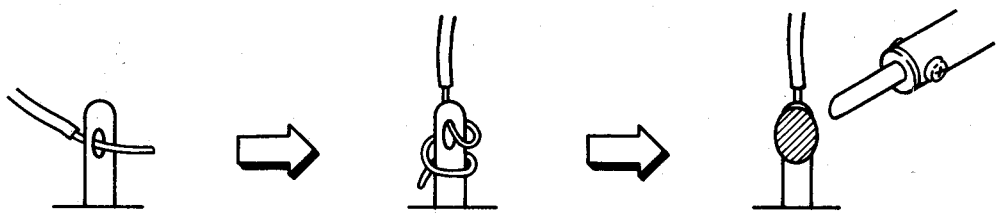
II. SAFETY INSTRUCTIONS

SAFETY CHECK AFTER SERVICING

Confirm the specified insulation resistance between power cord plug prongs and externally exposed parts of the set is greater than 10 Mohms, but for equipment with external antenna terminals (tuner, receiver, etc.) and is intended for [C] or [A], specified insulation resistance should be more than 2.2 Mohms (ground terminals, microphone jacks, headphone jacks. line-in-out jacks etc.)

PRECAUTIONS DURING SERVICING

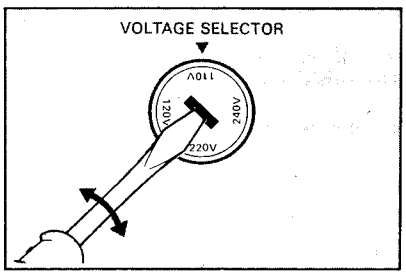
1. Parts identified by the ⚠ symbol parts are critical for safety.
   Replace only with parts number specified.
2. In addition to safety, other parts and assemblies are specified for conformance with such regulations as those applying to spurious radiation. These must also be replaced only with specified replacements.
   Examples: RF converters, tuner units, antenna selector switches, RF cables, noise blocking capacitors, noise blocking filters, etc.
3. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads
4. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers (Insulating Barriers)
   4) Insulation sheets for transistors
   5) Plastic screws for fixing microswitch (especially in turntable)
5. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.), wrap ends of wires securely about the terminals before soldering.



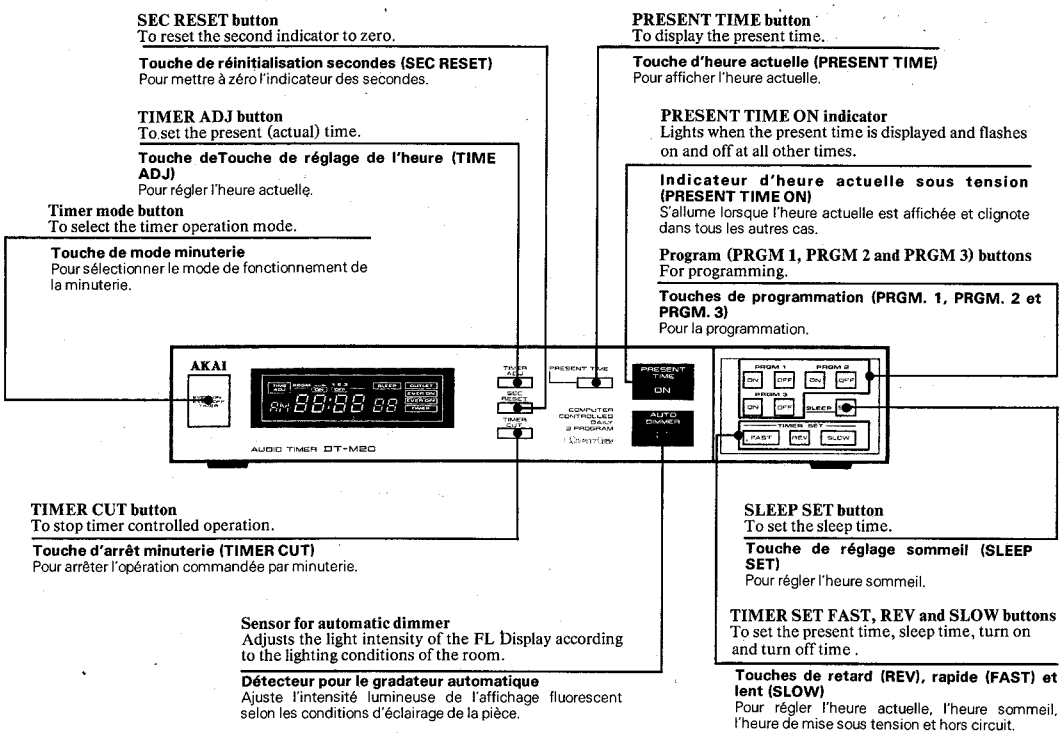
6. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).
7. Check that replaced wires do not contact sharp edged or pointed parts.
8. Also check areas surrounding repaired locations.
9. Use care that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

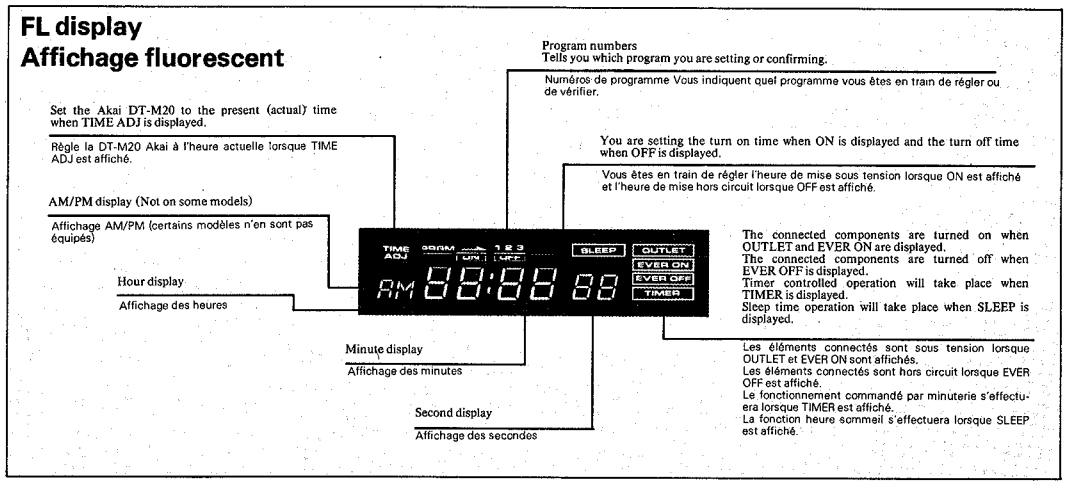
VOLTAGE CONVERSION

Models for some countries are not equipped with this facility, each machine is preset at the factory according to distination, but some machine can be set to 110V, 120V, 220V or 240V as required.
If the machine's voltage can be converted.
Before connecting the AC power cord, turn the VOLTAGE SELECTOR located on the rear panel with a screwdriver until the correct voltage is indicated.



III. CONTROLS


SEC RESET button
To reset the second indicator to zero.
Touche de réinitialisation secondes (SEC RESET)
Pour mettre à zéro l'indicateur des secondes.
TIMER ADJ button
To set the present (actual) time.
Touche deTouche de réglage de l'heure (TIME ADJ)
Pour régler l'heure actuelle.
Timer mode button
To select the timer operation mode.
Touche de mode minuterie
Pour sélectionner le mode de fonctionnement de la minuterie.
PRESENT TIME button
To display the present time.
Touche d'heure actuelle (PRESENT TIME)
Pour afficher l'heure actuelle.
PRESENT TIME ON indicator
Lights when the present time is displayed and flashes on and off at all other times.
Indicateur d'heure actuelle sous tension (PRESENT TIME ON)
S'allume lorsque l'heure actuelle est affichée et clignote dans tous les autres cas.
Program (PRGM 1, PRGM 2 and PRGM 3) buttons
For programming.
Touches de programmation (PRGM. 1, PRGM. 2 et PRGM. 3)
Pour la programmation.
AKAI
AUDIO TIMER DT-M20
TIMER CUT button
To stop timer controlled operation.
Touche d'arrêt minuterie (TIMER CUT)
Pour arrêter l'opération commandée par minuterie.
SLEEP SET button
To set the sleep time.
Touche de réglage sommeil (SLEEP SET)
Pour régler l'heure sommeil.
Sensor for automatic dimmer
Adjusts the light intensity of the FL Display according to the lighting conditions of the room.
Détecteur pour le gradateur automatique
Ajuste l'intensité lumineuse de l'affichage fluorescent selon les conditions d'éclairage de la pièce.
TIMER SET FAST, REV and SLOW buttons
To set the present time, sleep time, turn on and turn off time .
Touches de retard (REV), rapide (FAST) et lent (SLOW)
Pour régler l'heure actuelle, l'heure sommeil, l'heure de mise sous tension et hors circuit.


FL display
Affichage fluorescent
Program numbers
Tells you which program you are setting or confirming.
Numéros de programme Vous indiquent quel programme vous êtes en train de régler ou de vérifier.
Set the Akai DT-M20 to the present (actual) time when TIME ADJ is displayed.
Règle la DT-M20 Akai à l'heure actuelle lorsque TIME ADJ est affiché.
You are setting the turn on time when ON is displayed and the turn off time when OFF is displayed.
Vous êtes en train de régler l'heure de mise sous tension lorsque ON est affiché et l'heure de mise hors circuit lorsque OFF est affiché.
AM/PM display (Not on some models)
Affichage AM/PM (certains modèles n'en sont pas équipés)
Hour display
Affichage des heures
Minute display
Affichage des minutes
Second display
Affichage des secondes
The connected components are turned on when OUTLET and EVER ON are displayed.
The connected components are turned off when EVER OFF is displayed.
Timer controlled operation will take place when TIMER is displayed.
Sleep time operation will take place when SLEEP is displayed.
Les éléments connectés sont sous tension lorsque OUTLET et EVER ON sont affichés.
Les éléments connectés sont hors circuit lorsque EVER OFF est affiché.
Le fonctionnement commandé par minuterie s'effectuera lorsque TIMER est affiché.
La fonction heure sommeil s'effectuera lorsque SLEEP est affiché.

IV. ADJUSTMENT

4-1. STANDARD FREQUENCY OSCILLATOR ADJUSTMENT

1. Connect a Frequency Counter to TP3 as shown Fig. 4-1 .
2. Adjust the Trimmer Capacitor (C11), so that the Frequency Counter Reading is 128.00016 Hz (7.81249 msec).

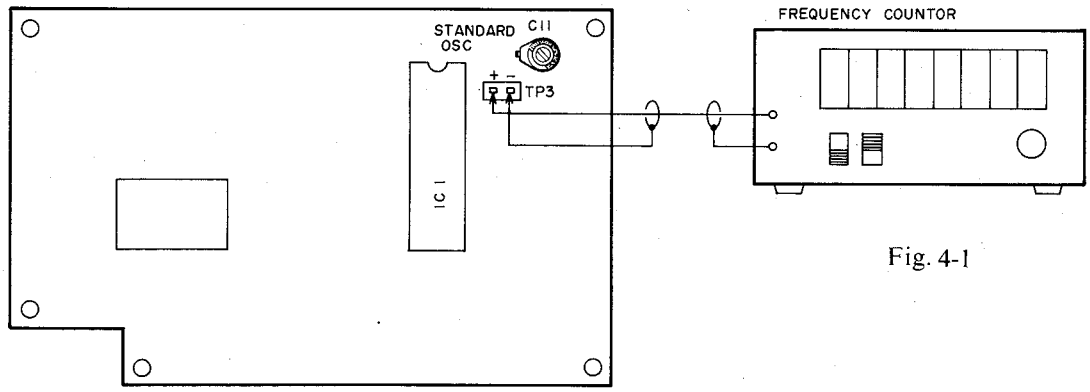


Fig. 4-1

V. PARTS LIST

RECOMMENDED SPARE PARTS

Because, if the parts listed below are on hand, almost any repair can be accomplished, we suggest that you stock these Recommended Spare Parts Items.

NO.		PART NO.	DESCRIPTION
1	N	BT-715293	⚠ TRANS POWER CAT-M2202A [C,A]
2	N	BT-715295	⚠ TRANS POWER CAT-M2202B [B]
3	N	BT-715294	⚠ TRANS POWER CAT-M2202E [E]
4	N	BT-715298	⚠ TRANS POWER CAT-M2202J [J]
5	N	BT-715297	⚠ TRANS POWER CAT-M2202U [U]
6		ED-349656	D LED AY5505S
7		ED-604541	D SILICON H 1S2076
8		ED-711466	D SILICON S5277B
9		ED-711480	D ZENER H MA1056
10		EF-690996	⚠ FUSE SEMKO T 250V 4.00A [E]
11		EF-691007	⚠ FUSE SEMKO T 3.15A 250V [B]
12		EI-711473	IC AN6873N
13		EI-711472	IC MN1455BXA
14		EI-711471	OSC X'TAL 4.1943MHZ
15		EM-344934	IND FL 6-MT-55ZYK
16		EQ-708679	⚠ RELAY AR321173 [U,J]
17		EQ-708677	⚠ RELAY AR32118 [E,B]
18		EQ-712561	⚠ RELAY AR32119 [C,A]
19		ES-708680	⚠ SW PUSH SDS3P [E]
20		ES-700720	⚠ SW SELECTOR ESE-372 [U]
21		ES-711474	SW TACT EVQ-QSB05K
22	N	ES-714795	SW TACT KHH10912
23		ET-712559	C.D.S P1202-06
24	N	ET-350335	TR 2SA564 Q
25	N	ET-342696	TR 2SC828 Q,R
26		ET-711469	TR 2SD856

"NOTE" N: New Parts

SYMBOL FOR DESTINATION

[A] : AAL (USA)
[B] : UK (England)
[C] : CSA (Canada)
[E] : CEE (Europe)
[J] : JPN (Japan)
[U] : U/T (Universal Area)

1. PC BOARD BLOCK

REF. NO.	PART NO.	DESCRIPTION
1-1A	BA-716134	PC MAIN BLK DT-M20(J) [U,J]
1-1B	BA-716135	PC MAIN BLK DT-M20(C,A) [C,A]
1-1C	BA-716136	PC MAIN BLK DT-M20(E) [E]
1-1D	BA-716137	PC MAIN BLK DT-M20(B) [B]

NOTE: PC MAIN BLK consists of PC BOARD (1) and PC BOARD (2).

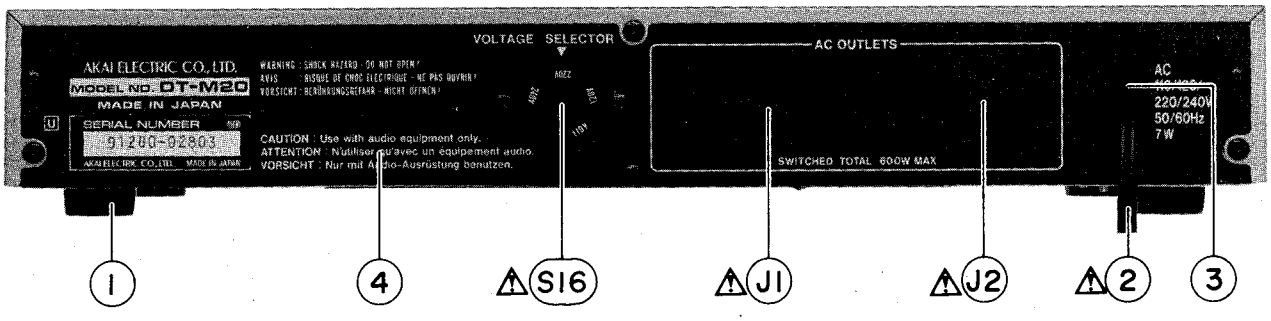
2. PC BOARD (1)

REF. NO.	PART NO.	DESCRIPTION
2-IC1	EI-711472	IC MN1455BXA
2-IC2	EI-711473	IC AN6873N
2-Q1	ET-711469	TR 2SD856
2-Q2,3	ET-350335	TR 2SA564 Q
2-Q4	ET-706935	TR 2SC1383NC
2-Q5	ET-342696	TR 2SC828 Q,R
2-Q6to8	ET-350335	TR 2SA564 Q
2-D1to3	ED-711466	D SILICON S5277B
2-D4	ED-711480	D ZENER H MA1056
2-D5to16	ED-604541	D SILICON H 1S2076
2-D17,18	ED-349656	D LED AY5505S
2-D19to21	ED-604541	D SILICON H 1S2076
2-RL1A	EQ-712561	⚠ RELAY AR32119 [C,A]
2-RL1B	EQ-708677	⚠ RELAY AR32118 [E,B]
2-RL1C	EQ-708679	⚠ RELAY AR321173 [U,J]
2-X1	EI-711471	OSC X'TAL 4.1943MHZ
2-C1	EC-316188	C EC V CUT SM 102M 25DC
2-C11	EC-706953	C S-FIX
2-FL1	EM-344934	IND FL 6-MT-55ZYK
2-F1A	EF-690996	⚠ FUSE SEMKO T 250V 4.00A [E]
2-F1B	EF-691007	⚠ FUSE SEMKO T 3.15A 250V [B]

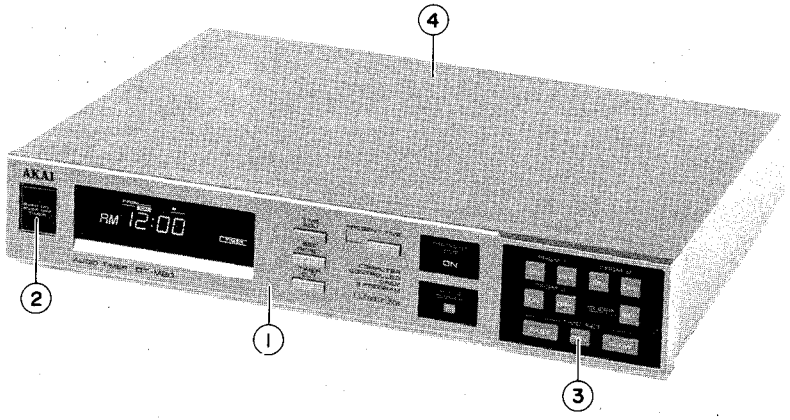
3. PC BOARD (2)

REF. NO.	PART NO.	DESCRIPTION
3-S1to3	ES-711474	SW TACT EVQ-QSB05K
3-S4,5	ES-714795	SW TACT KHH10912
3-S6to10	ES-711474	SW TACT EVQ-QSB05K
3-S11	ES-714795	SW TACT KHH10912
3-S12,13	ES-711474	SW TACT EVQ-QSB05K
3-S14	ES-714795	SW TACT KHH10912
3-S15	ES-711474	SW TACT EVQ-QSB05K
3-CDS	ET-712559	C.D.S P1202-06

ASSEMBLY BLOCK



FINAL ASSEMBLY BLOCK



4. ASSEMBLY BLOCK

REF. NO.	PART NO.	DESCRIPTION
4-1	SA-714801	FOOT
4-2A	EW-374894	⚠ AC CORD 2 CORES VM-0129A, VFF U/T [U]
4-2B	EW-524845	⚠ AC CORD 2 CORES VM1165B, VFF J [J]
4-2C	EW-716133	⚠ AC CORD C [C]
4-2D	EW-328245	⚠ AC CORD 2 CORES KP-8/SPT-1 105C UC [A]
4-2E	EW-604618	⚠ AC CORD 2 CORES VM-0364 E [E]
4-2F	EW-347023	⚠ AC CORD LTBS-2F 42/0.15×2 B [B]
4-3	EZ-631945	STRAIN RELIEF SR-4N-4
4-4A	SP-715287	PANEL REAR DT-M20(U)
4-4B	SP-715286	PANEL REAR DT-M20(J)
4-4C	SP-715282	PANEL REAR DT-M20(C)
4-4D	SP-715281	PANEL REAR DT-M20(A)
4-4E	SP-715283	PANEL REAR DT-M20(E)
4-4F	SP-715284	PANEL REAR DT-M20(B)
4-PTA	BT-715297	⚠ TRANS POWER CAT-M2202U[U]
4-PTB	BT-715298	⚠ TRANS POWER CAT-M2202J [J]
4-PTC	BT-715293	⚠ TRANS POWER CAT-M2202A[C,A]
4-PTD	BT-715294	⚠ TRANS POWER CAT-M2202E[E]
4-PTE	BT-715295	⚠ TRANS POWER CAT-M2202B[B]
4-S16	ES-700720	⚠ SW SELECTOR ESE-372[U]
4-S17	ES-708680	⚠ SW PUSH SDS3P [E]
4-J1A	EJ-351882	⚠ SOCKET OUTLET S2T733T122 JUC 3×2P [U,J,C,A]
4-J1B	EJ-343981	⚠ SOCKET OUTLET S2-729T-100 E 2P [E]
4-J1C	EJ-346641	⚠ SOCKET OUTLET S2-741-110 [B]
4-J2	EJ-349174	⚠ SOCKET OUTLET S2-732T-122 [U,C,A]

5. FINAL ASSEMBLY BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
5-1	BD-716126	PANEL FRONT BLK DT-M20
5-1B	BD-716127	PANEL FRONT BLK DT-M20-B
5-2	SK-716128	KNOB FUNCTION
5-3	SK-716129	KNOB PUSH RUBBER
5-3B	SK-716131	KNOB PUSH RUBBER-B
5-4	SP-715292	COVER UPPER
5-4B	SP-715280	COVER UPPER-B

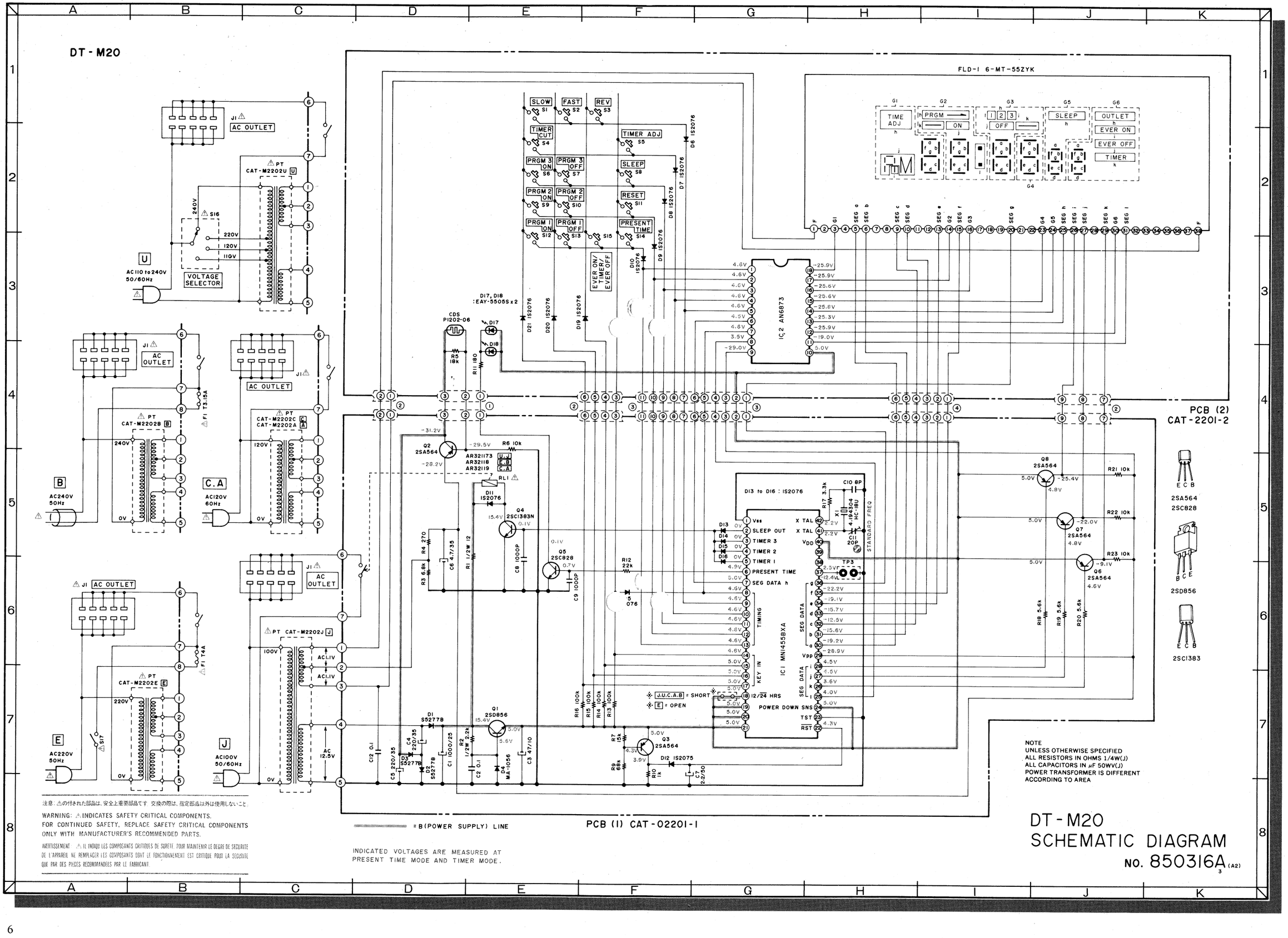
SYMBOL FOR COLOR VARIATION

NON : SILVER
B or BL : BLACK

INDEX

PART NO.	REF. NO.	PART NO.	REF. NO.	PART NO.	REF. NO.	PART NO.	REF. NO.	PART NO.	REF. NO.
BA-716134	1-1A	ED-604541	2-D14	EJ-346641	4-J1C	ES-714795	3-S14	SA-714801	4-1
BA-716135	1-1B	ED-604541	2-D10	EJ-349174	4-J2	ES-714795	3-S11	SK-716128	5-2
BA-716136	1-1C	ED-604541	2-D12	EJ-351882	4-J1A	ES-714795	3-S4	SK-716129	5-3
BA-716137	1-1D	ED-604541	2-D8	EM-344934	2-FL1	ES-714795	3-S5	SK-716131	5-3B
BD-716126	5-1	ED-604541	2-D16	EQ-708677	2-RL1B	ET-342696	2-Q5	SP-715280	5-4B
BD-716127	5-1B	ED-604541	2-D21	EQ-708679	2-RL1C	ET-350335	2-Q8	SP-715281	4-4D
BT-715293	4-PTC	ED-604541	2-D7	EQ-712561	2-RL1A	ET-350335	2-Q2	SP-715282	4-4C
BT-715294	4-PTD	ED-604541	2-D6	ES-700720	4-S16	ET-350335	2-Q3	SP-715283	4-4E
BT-715295	4-PTE	ED-604541	2-D11	ES-708680	4-S17	ET-350335	2-Q6	SP-715284	4-4F
BT-715297	4-PTA	ED-604541	2-D20	ES-711474	3-S6	ET-350335	2-Q7	SP-715286	4-4B
BT-715298	4-PTB	ED-711466	2-D2	ES-711474	3-S12	ET-706935	2-Q4	SP-715287	4-4A
EC-316188	2-C1	ED-711466	2-D1	ES-711474	3-S1	ET-711469	2-Q1	SP-715292	5-4
EC-706953	2-C11	ED-711466	2-D3	ES-711474	3-S10	ET-712559	3-CDS		
ED-349656	2-D17	ED-711480	2-D4	ES-711474	3-S9	EW-328245	4-2D		
ED-349656	2-D18	EF-690996	2-F1A	ES-711474	3-S7	EW-347023	4-2F		
ED-604541	2-D15	EF-691007	2-F1B	ES-711474	3-S15	EW-374894	4-2A		
ED-604541	2-D9	EI-711471	2-X1	ES-711474	3-S13	EW-524845	4-2B		
ED-604541	2-D5	EI-711472	2-IC1	ES-711474	3-S3	EW-604618	4-2E		
ED-604541	2-D19	EI-711473	2-IC2	ES-711474	3-S8	EW-716133	4-2C		
ED-604541	2-D13	EJ-343981	4-J1B	ES-711474	3-S2	EZ-631945	4-3		

VI. SCHEMATIC DIAGRAM

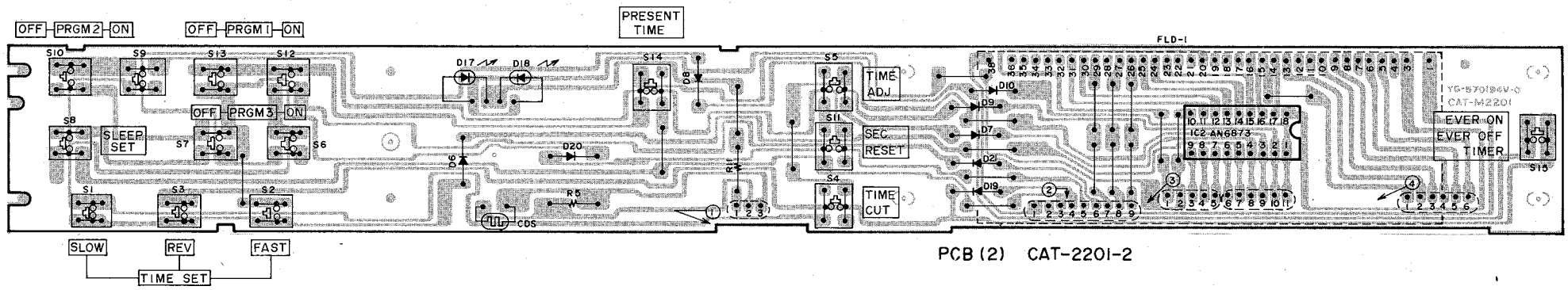


注意：⚠の付された部品は、安全上重要部品です 交換の際は、指定部品以外は使用しないこと。

WARNING: ⚠ INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

AVERTISSEMENT : ⚠ IL INDIQUE LES COMPOSANTS CRITIQUES DE SURETE. POUR MAINTENIR LE DEGRE DE SECURITE DE L'APPAREIL NE REMPLACER LES COMPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SECURITE QUE PAR DES PIECES RECOMMANDEES PAR LE FABRICANT.

DT-M20
SCHEMATIC DIAGRAM
NO. 850316A (A2)
3

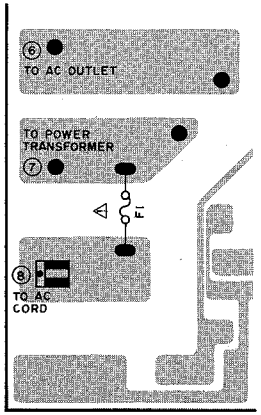


PCB (2) CAT-2201-2

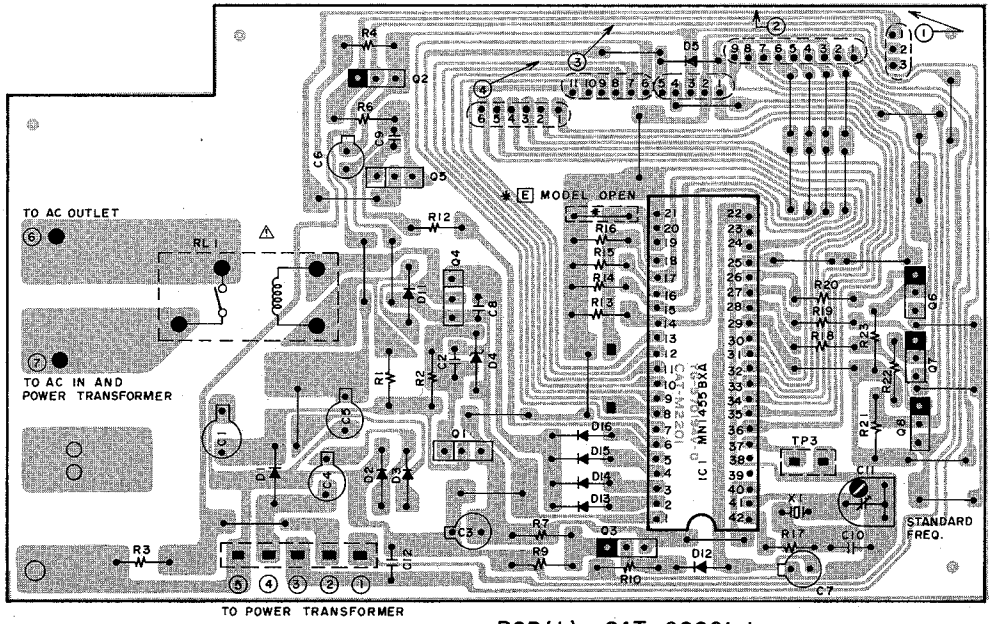
注意: ⚠の付された部品は、安全上重要部品です。交換の際は、指定部品以外は使用しないこと。

WARNING: ⚠ INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

AVERTISSEMENT: ⚠ IL INDIQU LES COMPOSANTS CRITIQUES DE SURETE. POUR MAINTENIR LE DEGRE DE SECURITE DE L'APPAREIL NE REMPLACER LES COMPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SECURITE QUE PAR DES PIECES RECOMMANDEES PAR LE FABRICANT.

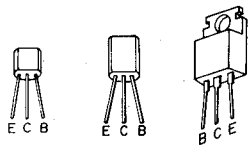


PCB(1) CAT-02201-1
E,B MODELS



PCB(1) CAT-02201-1
U,C,A,J MODELS

= PNP TRANSISTOR
= NPN TRANSISTOR



2SA564
2SC828
2SC1383
2SD856

Q1 ---------- 2SD856
Q2,3,6 to 8 ---- 2SA564
Q4 --------- 2SC1383
Q5 --------- 2SC828

D1 to 3 -------S5277B
D5 to 16, 19 to 21 --1S2076

AKAI ELECTRIC CO., LTD.
12-14, 2-Chome, Higashi-Kojiya, Ohta-Ku, Tokyo, Japan. Printed No. 850328-11-1600
TEL: Tokyo (742)5111 CABLE: HIFIAKAI TOKYO TELEX: J26261 Printed Date: April 15, 1985 Printed in Japan.